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MC2 Lenny Weston | October 5, 2021

NPS Foundation Vice President retired Marine Corps Col. Todd Lyons, right, and TMGcore Director of Hardware Innovation Andrew Downs, left, check out the company's OTTO Edgebox following its installation in the NPS Data Center. The platform was installed in support of a research partnership to explore Navy and defense applications.

The Naval Postgraduate School (NPS) and TMGcore, a company specializing in the development and commercialization of emerging technologies, signed a five-month Limited Purpose Cooperative Research and Development Agreement (LP-CRADA) beginning Aug. 19.

As part of the agreement, TMGcore is initially installing their OTTO Edgebox in the NPS main data center. The Edgebox is a high-density, two-phase liquid immersion cooling data center that has potential in Navy, DOD applications … NPS students and faculty will be exploring some of them.

This is the essential purpose of this LP-CRADA … to test and evaluate the Edgebox technology and identify how it can enable novel research requiring high-performance computing solutions, leveraging the experience of NPS researchers in the identification of applicable use cases that advance the mission objectives of military operators.

"One of the benefits [of this technology] is being able to pack a lot of computers in a relatively small space and be able to keep it cool," said Dr. Jeff Haferman, NPS' Information Technology and Communication Services (ITACS) Director of Research Computing, and Principal Investigator on this effort. "The other is that it can really be thought of as a somewhat mobile computing platform that could easily go on a submarine or ship."

Haferman explained how allowing for a relatively small container to house an exorbitant amount of computing power allows for capabilities in hazardous terrain, like the desert. The ability to do weather forcasting to foresee oncoming dust storms or other adverse conditions, for example, would create an advantage for the warfighter.

NPS High Performance Computing Systems Architect Eric Adint said that the graphics processing unit (GPU) in the Edgebox could have an impact on the available platforms needed to run some of the advanced weather forecasting models that the Navy uses.

"It's the next generation or the next evolution of high-performance computing," said Adint. "We're trying to make sure that we have the right tools for our professors here so that [the faculty] can create the models and the algorithms to generate the next generation of [meteorology and operational oceanography] and remote sensing intelligence."

As a defense-focused graduate university, NPS with its .EDU network offers a powerful and flexible platform for advanced cyber education and applied research. For the students at NPS, the LP-CRADA offers them a chance to see this new innovative technology and learn about it from a research and development stage to bring that knowledge to the fleet.

"They'll be using it when they graduate and it is a new technology, so we have a lot of students that are doing things, quite frankly, we didn't do a year ago," said Haferman. "One of the focal points of NPS is innovation, and this is an innovative technology. It is something that is just going to market and we want to expose students to this type of technology early. You can't find this in many other data centers right now."

While NPS, and in turn the DOD, have plenty of upside in this LP-CRADA, TMGcore will be able to see how their Edgebox works when put through scenarios and tests from outside sources. TMGcore's Vice President, Global Sales and Marketing Brad Furnish said that deploying the Edgebox at NPS taps into the innovative minds that know how to use the technology for the military's specific purposes.

"What we want out of this is a true collaboration of here's where we can go, here's what we can use it for, and here's how we can adapt it so we can use it in other fields," Furnish noted. "We're looking forward to collaborating with NPS, and this is the beginning of what we feel is

going to be a very long relationship."